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APPLICATION NO.	FILING DATE	FIRST NAMED INVENTOR	ATTORNEY DOCKET NO.	CONFIRMATION NO.
10/809,956	03/26/2004	Matthew J. Dejneka	SP04-025	7898
22928	7590	11/16/2005	EXAMINER	
CORNING INCORPORATED			LEVKOVICH, NATALIA A	
SP-TI-3-1			ART UNIT	
CORNING, NY 14831			PAPER NUMBER	
			1743	
DATE MAILED: 11/16/2005				

Please find below and/or attached an Office communication concerning this application or proceeding.

Office Action Summary

Application No.

10/809,956

Applicant(s)

DEJNEKA ET AL.

Examiner

Natalia Levkovich

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-- The MAILING DATE of this communication appears on the cover sheet with the correspondence address --

Period for Reply

A SHORTENED STATUTORY PERIOD FOR REPLY IS SET TO EXPIRE 3 MONTH(S) OR THIRTY (30) DAYS, WHICHEVER IS LONGER, FROM THE MAILING DATE OF THIS COMMUNICATION.

- Extensions of time may be available under the provisions of 37 CFR 1.136(a). In no event, however, may a reply be timely filed after SIX (6) MONTHS from the mailing date of this communication.
- If NO period for reply is specified above, the maximum statutory period will apply and will expire SIX (6) MONTHS from the mailing date of this communication.
- Failure to reply within the set or extended period for reply will, by statute, cause the application to become ABANDONED (35 U.S.C. § 133). Any reply received by the Office later than three months after the mailing date of this communication, even if timely filed, may reduce any earned patent term adjustment. See 37 CFR 1.704(b).

Status

- 1) ☒ Responsive to communication(s) filed on 26 March 2004.
- 2a) ☐ This action is **FINAL**. 2b) ☒ This action is non-final.
- 3) ☐ Since this application is in condition for allowance except for formal matters, prosecution as to the merits is closed in accordance with the practice under *Ex parte Quayle*, 1935 C.D. 11, 453 O.G. 213.

Disposition of Claims

- 4) ☒ Claim(s) 1-20 is/are pending in the application.
- 4a) Of the above claim(s) 17-20 is/are withdrawn from consideration.
- 5) ☐ Claim(s) _____ is/are allowed.
- 6) ☒ Claim(s) 1-16 is/are rejected.
- 7) ☐ Claim(s) _____ is/are objected to.
- 8) ☐ Claim(s) _____ are subject to restriction and/or election requirement.

Application Papers

- 9) ☐ The specification is objected to by the Examiner.
- 10) ☒ The drawing(s) filed on 26 March 2004 is/are: a) ☒ accepted or b) ☐ objected to by the Examiner.
Applicant may not request that any objection to the drawing(s) be held in abeyance. See 37 CFR 1.85(a).
Replacement drawing sheet(s) including the correction is required if the drawing(s) is objected to. See 37 CFR 1.121(d).
- 11) ☐ The oath or declaration is objected to by the Examiner. Note the attached Office Action or form PTO-152.

Priority under 35 U.S.C. § 119

- 12) ☐ Acknowledgment is made of a claim for foreign priority under 35 U.S.C. § 119(a)-(d) or (f).
- a) ☐ All b) ☐ Some * c) ☐ None of:
1. ☐ Certified copies of the priority documents have been received.
2. ☐ Certified copies of the priority documents have been received in Application No. _____.
3. ☐ Copies of the certified copies of the priority documents have been received in this National Stage application from the International Bureau (PCT Rule 17.2(a)).
- * See the attached detailed Office action for a list of the certified copies not received.

Attachment(s)

- 1) ☒ Notice of References Cited (PTO-892)
- 2) ☐ Notice of Draftsperson's Patent Drawing Review (PTO-948)
- 3) ☒ Information Disclosure Statement(s) (PTO-1449 or PTO/SB/08)
Paper No(s)/Mail Date _____.
- 4) ☐ Interview Summary (PTO-413)
Paper No(s)/Mail Date. _____.
- 5) ☐ Notice of Informal Patent Application (PTO-152)
- 6) ☐ Other: _____.

DETAILED ACTION

Election/Restrictions

1. Restriction to one of the following inventions is required under 35 U.S.C. 121:
 - I. Claims 1-16, drawn to a microfluidic device, classified in class 422, subclass 100.
 - II. Claims 17-20, drawn to a method of trapping particles, classified in class 436, subclass 130.

The inventions are distinct, each from the other because of the following reasons:

2. Inventions II and I are related as process and apparatus for its practice. The inventions are distinct if it can be shown that either: (1) the process as claimed can be practiced by another materially different apparatus or by hand, or (2) the apparatus as claimed can be used to practice another and materially different process. (MPEP § 806.05(e)). In this case the apparatus can be used, for example, as a flow restrictor.

3. Because these inventions are distinct for the reasons given above and have acquired a separate status in the art as shown by their different classification, restriction for examination purposes as indicated is proper.

4. During a telephone conversation with Mr. Ronald Paglierani on 10/08/2005 a provisional election was made without traverse to prosecute the invention of Group I, claims 1-16. Affirmation of this election must be made by applicant in replying to this

Office action. Claims 17-20 were withdrawn from further consideration by the examiner, 37 CFR 1.142(b), as being drawn to a non-elected invention.

Claim Interpretation

5. Claim 11 recites "an apparatus as claimed in claim 5, wherein the transparent capillary is heated with the plurality of small capillaries in a collapsed region.". The above-cited functional recitation has not been given patentable weight because it is narrative in form. In order to be given patentable weight, a functional recitation must be expressed as a "means" for performing the specified function, as set forth in 35 USC §112, 6-th paragraph, and must be supported by recitation in the claim of sufficient structure to warrant the presence of the functional language. *In re Fuller*, 1929 C.D. 172; 388 O.G. 279.

Claim 15 recites "the reactor of claim 14, wherein the particles comprise microbeads". Since the particles were not positively claimed, they are not considered to be a part of the invention and are not accorded any patentable weight.

Claim 16 recites "the reactor of claim 14, wherein the optical detector comprises a charge-coupled device for detecting light coming from the reaction in the detection zone ". Since the optical detector was not positively claimed, it is not considered to be a part of the invention and is not accorded any patentable weight.

Claim Rejections - 35 USC § 102

6. The following is a quotation of the appropriate paragraphs of 35 U.S.C. 102 that form the basis for the rejections under this section made in this Office action:

A person shall be entitled to a patent unless –

(b) the invention was patented or described in a printed publication in this or a foreign country or in public use or on sale in this country, more than one year prior to the date of application for patent in the United States.

7. Claims 1-3, 5-6, 8, 11-12 and 14-16 are rejected under 35 U.S.C. 102(b) as anticipated by Swedberg (US 5085756).

Swedberg discloses a capillary tube 18 having inlet and porous frit / filter 12, as shown in Figure 2. Swedberg also teaches that capillaries can be made of fused silica or borosilicate glass (Col. 1, line 40) [transparent materials – Ex.].

Referring to claim 12, note that the particles are not a positively recited element of the invention and that the filter is structurally capable of retaining particles of some size.

8. Claims 1-3, 5-6, 8-9, 11-12 and 14-16 are rejected under 35 U.S.C. 102(b) as anticipated by He et al. (US 20030049862).

He et al. disclose a microfluidic device for “performing either single or continuous fluidic manipulations in a high-throughout format”(Abstract). As depicted in Figures 6A, 6B and 8, the device comprises (individual or assembled to a plate 10) microcolumns 22 which may be made of glass or polymer materials. Each microcolumn [‘transparent capillary’ – Ex.] can comprise a filter membrane 72. “Filter membranes could include commercially available membranes (e.g., nylon, cellulose acetate or cellulose nitrate), inorganic substrates (e.g., microporous glass or glass-frit wafer), or polymers and

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plastic (e.g., polystyrene, polyethylene, polypropylene, polycarbonates, polyethylene terephthalate (PET), polysulfones, polyesters, or cyclic olefins)" – see ([0056],[0059]).

Referring to claim 12, note that the particles are not a positively recited element of the invention and that the filter is structurally capable of retaining particles of some size.

Claim Rejections - 35 USC § 103

9. The following is a quotation of 35 U.S.C. 103(a) which forms the basis for all obviousness rejections set forth in this Office action:

(a) A patent may not be obtained though the invention is not identically disclosed or described as set forth in section 102 of this title, if the differences between the subject matter sought to be patented and the prior art are such that the subject matter as a whole would have been obvious at the time the invention was made to a person having ordinary skill in the art to which said subject matter pertains. Patentability shall not be negated by the manner in which the invention was made.

10. The factual inquiries set forth in *Graham v. John Deere Co.*, 383 U.S. 1, 148 USPQ 459 (1966), that are applied for establishing a background for determining obviousness under 35 U.S.C. 103(a) are summarized as follows:

1. Determining the scope and contents of the prior art.
2. Ascertaining the differences between the prior art and the claims at issue.
3. Resolving the level of ordinary skill in the pertinent art.
4. Considering objective evidence present in the application indicating obviousness or nonobviousness.

11. Claim 4 is rejected under 35 U.S.C. 103(a) as being unpatentable over any of Swedberg or He in view of Chu et al. (US 5985164).

Swedberg or He do not disclose filter holes having hexagonal shape. However, filters / frits with hexagonal holes are well known in the art (see, for example, column 7, line 40 of the Chu reference). It would have been obvious to one of ordinary skill in the art at the time the invention was made to have employed such filters in the modified

devices of Swedberg or He, since the hexagonal shape provides higher density of holes and forms reinforcement ribs increasing the mechanical strength in the vertical direction of the filtering unit.

12. Claim 7 is rejected under 35 U.S.C. 103(a) as being unpatentable over any of Swedberg or He in view of Shucla et al. (US 6416716).

Swedberg or He do not disclose the transparent capillary having rectangular shape (see, for example, column 6, lines 30-35 of the Shucla reference). However, tubes / capillaries of the above mentioned shape are commonly used in the art. It would have been obvious to one of ordinary skill in the art at the time the invention was made to have employed a rectangular capillary tube in the modified devices of Swedberg or He, since this shape would provide stability to an array of such capillaries.

13. Claim 10 is rejected under 35 U.S.C. 103(a) as being unpatentable over any of Swedberg or He in view of Cole et al. (US 5879949).

Swedberg or He do not disclose a solvent resistant coating of transparent capillary. However, protective coatings are routinely employed in the art. For example, Cole discloses "a polyimide coating on fused silica capillary...resistant to all solvents (Col.9, line 5). It would have been obvious to one of ordinary skill in the art at the time the invention was made to have employed a capillary tube with a solvent resistant coating in the modified devices of Swedberg or He, in order to provide the surface inert to aggressive fluids.

14. Claim 13 is rejected under 35 U.S.C. 103(a) as being unpatentable over any of Swedberg or He in view of Roach et al. (US 20010005489).


Swedberg or He do not disclose 'manipulation system for moving microfluidic reactors', however, automatic systems handling microplates or microfluidic circuits are commonly used in the art (see, for example, [0051] and [0147] in the Roach reference). It would have been obvious to one of ordinary skill in the art at the time the invention was made to have employed a robotic arm in the modified devices of Swedberg or He, in order to provide automatic handling of the microfluidic reactors.

Conclusion

13. Any inquiry concerning this communication or earlier communications from the examiner should be directed to Natalia Levkovich whose telephone number is 571-272-2462. The examiner can normally be reached on Mon-Fri, 8 a.m.-4p.m..

If attempts to reach the examiner by telephone are unsuccessful, the examiner's supervisor, Jill Warden can be reached on 571-272-1267. The fax phone number for the organization where this application or proceeding is assigned is 703-872-9306.

Information regarding the status of an application may be obtained from the Patent Application Information Retrieval (PAIR) system. Status information for published applications may be obtained from either Private PAIR or Public PAIR. Status information for unpublished applications is available through Private PAIR only. For more information about the PAIR system, see <http://pair-direct.uspto.gov>. Should you have questions on access to the Private PAIR system, contact the Electronic Business Center (EBC) at 866-217-9197 (toll-free).


JAN LUDLOW
PRIMARY EXAMINER